NOTES 01: DATA

Stat 120 | Fall 2025 Prof Amanda Luby

1 The Structure of Da	ata		
Cases			
Variables			
2 Types of Variables	;		
Quantitative			
Categorical			
Explanatory			
Response			

3 Examples

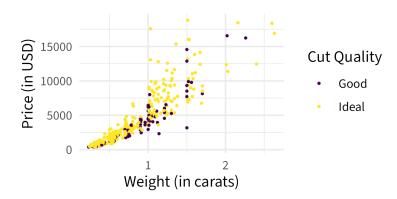
Label the *cases* and *variables*. For each variable, state whether it is *categorical* or *quantitative*. Indicate if there's clear *response* or *explanatory* variables

3.1 Penguins

# A tibble: 344 x 8									
species island		island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g			
	<fct></fct>	<fct></fct>	<dbl></dbl>	<dbl></dbl>	<int></int>	<int></int>			
1	Adelie	Torgersen	39.1	18.7	181	3750			
2	Adelie	Torgersen	39.5	17.4	186	3800			
3	Adelie	Torgersen	40.3	18	195	3250			
4	Adelie	Torgersen	NA	NA	NA	NA			
5	Adelie	Torgersen	36.7	19.3	193	3450			
6	Adelie	Torgersen	39.3	20.6	190	3650			
7	Adelie	Torgersen	38.9	17.8	181	3625			
8	Adelie	Torgersen	39.2	19.6	195	4675			
9	Adelie	Torgersen	34.1	18.1	193	3475			
10	Adelie	Torgersen	42	20.2	190	4250			
# i 334 more rows									
# i 2 more variables: sex efets year eints									

i 2 more variables: sex <fct>, year <int>

3.2 Price of diamonds by carat and cut quality



3.3 Is there a "Sprinting Gene"?

A gene called ACTN3 encodes a protein which functions in fast-twitch muscles. Some people have a variant of this gene that cannot yield this protein. To address the question of whether this gene is associated with sprinting ability, geneticists tested people from three different groups: world-class sprinters, world-class marathon runners, and a control group of non-athletes. In the sames tested, 6% of the sprinters had the gene variant, compared with 18% of non-athletes and 24% of the marathon runners.

Sketch out a possible dataset, and then answer the questions.